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Metabolic Disturbances in Ruminants*

By

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The subject suggested by your Secretary is one embracing a number of conditions that appear to be of increasing importance and yet we know all too little of the exact physiological mechanism underlying their cause.

In presenting the subject matter of this address to you I have endeavoured to review the position as I see it. Though perhaps there may not be a great deal of new material I hope the manner of presentation will provoke a good discussion, for a discussion on a subject such as this by a Division such as yours can be a most useful method of bringing to light information that is invaluable in our continued fight against animal disease. I am a staunch believer in the part the veterinary practitioner can and does play in revealing those clues that guide and inspire further research; in very truth the clinician is the spearhead of research in its truest sense for surely he is the field research worker who learns of disease problems at the moment of their inception.

The field presented by the title of metabolic disturbances is a very large one and I intend to confine my attention to several restricted but inter-related parts of it. I hope in so doing I will succeed in presenting the general picture in a light that may be somewhat new to you.

I would like at the outset to emphasise that we are justified in regarding disturbances of metabolism as being to a very large extent man-made disease of cattle.

Milk Fever

First I would like to touch on the subject of milk fever. Historically the work done on this condition is important for this was the first of our animal diseases investigated by more modern biochemical methods. The progress made in the study of the aetiology of this disease provided a stimulus and encouragement to veterinary biochemists. Unfortunately as far as milk fever is concerned, investigation appears to have stopped short of the complete elucidation of the aetiology. I have no doubt you are familiar with the paper published by Dryerre & Greig in March, 1925, in which they put forward the following suggestions: "The animal is suffering primarily from a parathyroid deficiency. The parathyroids cannot cope with the increased metabolism incidental to pregnancy and parturition. Faulty metabolism sets in and an accumulation of protein toxins (*e.g.*, guanidin) gathers in the body. The formation of guanidin in the bowel and its absorption are facilitated by intestinal stasis and its associated intestinal derangements. There is also a diminution in the available calcium. The tissues are on the point of reaching to this condition, when relatively slight excitement by releasing a certain quantity of adrenalin sensitises the tissues and precipitates the crisis. A form of tetany results."

Then in June, 1925, Little & Wright published their paper stating that: "Determination of the calcium content of the blood plasma of cows suffering from milk fever shows that considerable diminutions (in mild cases 20 to 30 per cent., in severe cases up to 60 per cent.) accompany the onset of this disease."

In 1928 Dryerre & Greig brought forward more evidence to confirm the association of a fall in blood calcium with the onset of the disease, and in 1930 Greig showed the value of calcium gluconate in the treatment of milk fever. Many of you will remember how the troubles associated with the use of a simple solution of calcium gluconate were solved by the introduction of calcium borogluconate.

Now all this work provided us with valuable new information as to the nature of milk fever but still left us in darkness as to its fundamental cause. Many thousands of cows have been successfully treated by the parenteral injection of calcium compounds, but it is common knowledge that during the intervening years, it has been found necessary to increase the dose until the majority of practitioners find it essential to administer from 3½ to 4 ounces. Even with these larger doses many practitioners find they do not get a satisfactory response and this has been our experience in the Edinburgh area. I want to describe to you some observations made by members of the clinical staff of the Royal (Dick) Veterinary College in conjunction with my colleague Professor Robertson that are, I think, important. Briefly, these concern cases in which there was virtually no response to the parenteral injection of calcium borogluconate but there was an immediate prompt and dramatic response to udder inflation carried out some hours after the injection of calcium.

There are various questions one would like to answer but cannot. Why does inflation of the udder cause such a rapid recovery when injection of calcium had failed? And then there is the fundamental question, what is the action of udder inflation? I think the idea that udder inflation stops the loss of calcium into the milk and so leads to an increase in the blood content is quite untenable. These cows had been recumbent for some hours and had presumably stopped secreting milk. Is it not more reasonable to assume that udder inflation produces an unknown reflex action by virtue of the pressure exerted on the sensory nerve endings in the udder? You will be familiar with Petersen's work on the let-down of milk and how it can be stimulated by the application of warm cloths to the udder. The udder is one of those exquisitely sensitive tissues that when stimulated can produce remote effects through the release of hormones. I suggest that if we knew more of what happens when the udder is inflated we might know more of the fundamental cause of milk fever.

Now I cannot say I am happy at the thought of having to resort to udder inflation in the routine treatment of milk fever. One of the great advantages of the calcium treatment was that it obviated the need to interfere with the udder. We now know how easily tuberculosis can be spread by instruments and I strongly suggest that if the udder is to be inflated the *whole* apparatus must be sterilised by boiling immediately before use in any case. It is quite inadequate only to sterilise the teat siphon. An added precaution is to keep one inflation apparatus for attested herds and another for non-attested herds. A refinement is to keep a set on an attested herd for use there only.

Grass Tetany

This troublesome condition is, we believe, associated with a fall in the blood magnesium but we do not understand the mechanism by which the blood magnesium is reduced; indeed, we know very little of magnesium metabolism at all. Now judging from the results following the use of magnesium salts in treatment, we are dealing with either two forms of the same disease or with two different diseases presenting similar clinical signs. Some cases respond to the parenteral injection of magnesium salts; some do not respond at all. Furthermore, the circumstances of onset vary; sometimes we find cows have been suddenly turned out to grass; sometimes the animals have been grazing for some time; the pasture may have been changed but in some cases there has been no change. Then we have those cases in which the onset is dramatically sudden and after a few violent convulsions the animal dies; other cases pursue a slower course and a proportion respond to treatment with magnesium salts. Twenty years ago I had eight cases in a milk herd, one Saturday afternoon; though I knew they were different from milk fever I treated them by udder inflation; all of them recovered. Since then I have treated many cases by udder inflation as so too have countless other veterinary practitioners. They do not all respond to udder inflation but the recovery rate is, I think, as high as with the injection of magnesium salts. What is the mechanism of udder inflation in this condition? How is it that udder inflation appears to be as effective in the treatment of a disease associated with hypocalcaemia as in the treatment of one associated with hypomagnesaemia?

Needless to say there are the same objections to udder inflation in the treatment of grass tetany as in milk fever.

Strangely enough, a more consistent measure of success has followed the feeding of a magnesium rich mineral supplement as a preventive of grass tetany than has followed the use of magnesium injections in the treatment of the clinical condition.

* Address to the Yorkshire Division, N.V.M.A., at Leeds, August 13th, 1948.

Acetonaemia

Many people tend to use the term acetonaemia to describe post-parturient dyspepsia or after-calving indigestion. That is a wrong use of the term and leads to confusion, for there are other diseases of the bovine constantly associated with acetonaemia; for instance, post-parturient bovine haemoglobinuria. Here again we seem to be dealing either with more than one form of the same disease or with at least two distinct disease entities. Some cases provide a spectacularly satisfactory response to treatment with glucose and an alkali; others show a completely benign indifference to our most gallant attempts to treat them on the best of quasi-scientific lines. Is the condition occurring in a shepherd's cow fed throughout the winter almost entirely on meadow hay the same as that occurring in a high yielding cow heavily fed throughout the winter for milk production? Why does the disease occur in the milk cow and not in the beef cow that is allowed to suckle her calf?

I have done quite a bit of work on this condition and have made quite a lot of observations; the results of these I propose to put before you for what they are worth. Some years ago I obtained samples of blood and urine from cows in various parts of Scotland, at regular intervals throughout the winter. In the dairy cows I found a progressive increase in the ketone content of the blood and urine throughout the winter but in beef cows I found no such increase.

Now I also observed that some dairy cows with a quite high blood and urine ketone content were apparently in perfect health. Examination of the blood sugar appeared to suggest that the appearance of clinical signs occurred only when an increased ketone content coincided with a severe reduction of the blood sugar. I think the critical point for blood sugar is between 30 and 35 mg. per 100 c.c. of blood. I then began to look for a possible source of the unusual quantity of ketones in apparently normal cows. I soon found that if I obtained rumen contents from cows in the late winter, I could, under favourable conditions of temperature and *p*H, incubate a washing of these contents with a foodstuff such as turnips and obtain substantial quantities of ketones. Following this a little further, I showed that ketone production takes place in the normal rumen and that the production increases in dairy cows kept indoors in winter feeding. From this you can deduce that we can no longer apply to the cow the old analogy of the fats being burned in the fire of the carbohydrates and ketones representing the smoke of the fats being imperfectly burned in a dull carbohydrate fire. That means we must radically revise our conceptions of ruminant digestion and particularly what takes place in the rumen itself. The full answer awaits the result of the necessary fundamental research into rumen digestion, but we now know that ketone formation normally takes place in the rumen and that the bovine can absorb and utilise ketones. However, we are justified in approaching the problem from the angle of experimental therapeutics and may then consider the results obtained from certain lines of treatment. Though the administration of vitamin A both in treatment and prophylaxis has a certain number of supporters, my own observations do not convince me that any consistent results have been obtained. I should value any information you may be able to contribute on this point.

After an extended trial, I am convinced that a lack of the vitamin B complex does not play a part in the production of this disease.

Heavy feeding for milk production does, in some herds, appear to be an important factor in the aetiology; up to a point we are, I think, entitled to regard this condition in the heavy yielding milk cow as another example of a man-made disease. Once we have admitted the possibility of a disease being man-made, we have opened up an avenue of rational approach to our thoughts regarding the disease. To what extent are we dealing with the end result of a combination of factors, namely excessive lactation, pregnancy, winter feeding and lack of exercise? In one herd the cows used never to be out during the winter; since they have been turned out for two hours a day, there appears to have been a reduction in the incidence of this condition. However, at once I must tell you that in other herds where the cows have always been put out for part of the day in the winter the incidence of the disease is serious. So we come back to the original query I raised—is this a single disease of differing types or is it really a case of similar manifestation by differing entities?

I have nothing new to tell you regarding treatment. Glucose and sodium bicarbonate, nux vomica and gentian, saline purges, all have their devotees, but the old farmer's wife with her treacle and baking soda was on as sound lines as we are to-day.

Post-parturient Bovine Haemoglobinuria

I shall be interested to know if you have any experience of this disease in your part of the country. It has been reported from various parts of the world including Canada and Sweden; in Scotland it has been known in Aberdeenshire and the surrounding area for many years; cases occur in other parts of Scotland.

Post-parturient bovine haemoglobinuria usually occurs within a fortnight of calving in cows that have been housed, the incidence being highest in the late winter and spring. Characterised by an acute anaemia, haemoglobinuria, cardiac palpitation and marked constipation, the disease is accompanied by a high mortality. It has been established that the disease is not due to babesiasis (piroplasmosis) and the exact aetiology is not yet known. By some it is thought to be due to a deficiency of phosphorus in the diet and it is thought that the feeding of steamed bone flour for two or three months before calving reduces the incidence of the disease. On the other hand, it is noticed that the disease occurs when a particular field is in turnips and this has led to the conception that the disease may be caused by a toxic substance present, or present in unusual quantity, in these turnips. It is possible that the disease is caused by the combined action of a toxic factor and a mineral deficiency. To me an interesting feature of the disease has been the pronounced degree of ketosis that is present. I cannot tell you whether this precedes or follows the onset of clinical signs but its existence provides another link in the as yet incomplete chain of our knowledge of ketosis in cattle.

Treatment with drugs in the ordinary way gives rather contradictory results but it would seem rational to use substitution therapy in these cases, that is to say, transfusion of blood to replace that destroyed by the acute haemolytic anaemia.

Malnutrition and Parasitism

Many of you must have been impressed with the fact that one animal in apparently perfect health may be carrying the same burden of helminths as one which is showing distinct clinical signs of gross parasitism. I have been studying these cases particularly in cattle and sheep and it has become abundantly clear that a most important factor in the production of ill-health due to helminthiasis is the nutritional level of the affected animals. So much am I impressed by these observations that I consider it is as important to investigate the nutritional level as to investigate the nature and extent of the parasitic burden. In its most extreme form we see this combination of helminthiasis and malnutrition in young cattle during the later part of the winter. The problem presented by these animals when they get really down in condition is an extremely difficult one. The basal metabolic rate has been so reduced that even after the animals have been dosed with anthelmintics they are unable to pick up condition. We must also remember that there is no anthelmintic but has some toxic action and that these animals in their emaciated, anaemic, anasarcous condition are quite unable to cope with the toxicity of the anthelmintic; in consequence dosing for worms is often the last straw and the animals go down shortly after being dosed. The veterinary profession has an important role to play in educating the farming community in regard to the value of early prophylactic dosing for worms where needed and the importance of maintaining an adequate nutritional level throughout the winter. Very much more could be done to control parasitism by management of pastures and adequate winter feeding than is being done in many districts. It is our job to see that this is carried out.

Much the same applies to skin parasitism. We had an extremely clear-cut illustration of this in a widespread outbreak of sarcoptic mange in cattle in the north-west of Scotland. In well-nourished cattle that were thriving the skin condition remained localised and responded readily to dressing with acaricides. In cattle that were poorly nourished and down in condition the lesions of mange became generalised and treatment with acaricides was completely ineffective until the animals began to thrive, which the majority of them did when they got out to grass again in the spring.

One realises that ruminants show truly remarkable recoveries from the effects of malnutrition when turned out to grass, but the loss of condition and in some cases loss of life that ensues from malnutrition in the winter months is a cause of serious economic loss that could very largely be avoided. It is well to remember that malnutrition may play an important part in causing losses from chronic bacterial disease as, for instance, one has seen in an outbreak of Johne's disease in a small herd.

Trace Element Deficiencies

The principal trace element deficiency with which we have to contend in this country is cobalt deficiency. In some areas, for instance, the Hebrides and parts of the Cheviots, there are districts in which there is an absolute deficiency of cobalt. In other areas there is what one might term only a partial deficiency. Diagnosis of cobalt deficiency can only be established satisfactorily by a spectrographic analysis of soil and herbage. It is very important that all other causes of debility should be eliminated. It appears to me that as a result of advertising campaigns there is a tendency on the part of many farmers to rely on mineral supplements containing cobalt as a remedy for debility; in consequence other causes of debility

Is Cysticercosis bovis on the Increase in this Country?

By

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The purpose of this contribution is to draw the attention of my colleagues, especially those engaged in meat inspection or in cattle practice, to the fact that taeniiasis saginata amongst adults and children appears to be on the increase in this country.

Tapeworm segments, which have been submitted to this institute by medical practitioners for identification during the past 18 months, were found to be those of *Taenia saginata*, the beef tapeworm. Other medical practitioners have made enquiries *re* the treatment of taeniiasis in man.

These requests and enquiries have now been followed by the submission of *Cysticerci*, for identification or for the confirmation of provisional determinations, from the masseter muscles and the hearts of cattle from widely separated areas in England. It is realised that the infected animals may not have been slaughtered in the county of origin. The transfer of slaughter stock from one county to another may account for what appears to be a widespread infection in the ox.

It would appear that the detection of *Cysticercus bovis* in beef followed an appeal from the Ministry of Food (why not the Ministry of Health or Ministry of Agriculture and Fisheries ?) that a lookout be kept for this parasite. All the specimens, which have been received hitherto, have been recovered from the masseter muscles and the heart. This suggests that some may have escaped notice to establish themselves in man and propagate their kind.

It is realised that most medical and veterinary text-books state the findings of the famous Professor Ostertag who announced many years ago that the muscles of the jaw are much more frequently invaded than those of other parts of the carcase. His figures are : Masseter muscles 360 times and other organs only 55 times. The text-books omit to record that he did state that the more you look for them the more you will find.

Those who are interested in the examination of beef for *C. bovis* should consult the findings of Viljoen (1937). His contribution, dealing with cysticercosis in pork and beef, contains much information about the geographical distribution and incidence of cysticercosis in different countries and the sterilisation of infected carcases.

It is regretted that no review of Viljoen's contribution is possible at the moment. His analysis of the actual number of cysts found in the various organs in 113 lightly infested carcases may prove of interest and is as follows :—

	Cases	*Measles*
In the masticatory muscles in	94	129
„ muscles of the shoulder above the elbow	61	113
„ tongue	16	17
„ heart	5	6
„ psoas muscles	3	3
„ external muscles (brisket)	2	2
„ semitendinosus muscle*	1	1

* No incisions were made into the hind limbs except in one case to remove a bruised area and a viable cyst was found.

Viljoen reminds the South African meat inspectors that " Regulations " restrict routine incisions to a bare minimum in those parts which they are expected to incise. He reminds them that the size of these incisions is not definitely prescribed and he hopes that they will make long and deep cuts.

I have no doubt that the butchers in this country will object strongly to too many incisions but I entertain no doubts that the consumer would prefer the incised carcase to becoming infested with a long slimy tapeworm—a most undesirable companion whose gravid segments do at times force the anal sphincters causing most unpleasant sensations according to the sufferers.

This forcing of the anal sphincters is evidently a common phenomenon and explains how the installation of proper sanitation on farms may fail to arrest the passage of the worm from man to cattle. It also explains how the infected town dweller may expose stock to infection during his access to cattle pastures.

The present increase in the incidence of this parasite in England and evidently in Northern Ireland, should perhaps be attributed to the fact that the meat inspectors and the authorities have overlooked the possibility of infection being introduced by infected human beings from Central and Eastern Europe at the outbreak of World War II. The German and Italian prisoners of war and soldiers from allied countries may have contributed to the present state of affairs. Cysticercosis bovis was evidently on the increase in Germany at the outbreak of war and control during the war must have deteriorated. Returned soldiers from Europe, Africa and Asia likewise may have made a contribution. Personnel in the army of occupation in Germany can be expected to be exposed to invasion, not only by *T. saginata* but also by *T. solium*.

It is definite that the control of cysticercosis in cattle in this country demands the harmonious co-operation of the National Health Service, the private medical practitioners, the veterinarian and the Ministries of Food, Health, Defence and Agriculture and Fisheries.

Taenia saginata has managed to establish itself well in this country because its presence in persons from abroad was overlooked and because *Cysticercus bovis* escaped notice when its presence was not suspected.

Young calves, attended to by infected persons, become infected readily. Some South African observers and others believe that intra-uterine infections may occur. Viljoen considers that drought conditions may contribute towards the ingestion of infected human stools by hungry animals. While on the rinderpest inoculation campaign in 1939–43 on the Northern Rhodesia-Tanganyika-Nyasaland borders, I have witnessed cattle rushing to native huts and ingesting urine-soaked earth on being released from their pens in the morning. There was a marked craving for salt in those parts. In doing this they may readily ingest faecal matter containing the eggs and segments of *T. saginata*.

My Northern Rhodesia experience suggests that hot arid conditions may limit rather than aid the spread of infection from man to beast. The incidence of *C. bovis* in that Territory is only about 1 per cent. and not as high as stated by Viljoen. The high incidence reported from Ndola was due to the fact that an intra-muscular form of onchocerciasis was being mistaken for degenerated cysts of the beef tapeworm. When that was pointed out to the authorities at Ndola the incidence dropped to 1 per cent.

In South Africa the disease does occur in comparatively arid regions but those are also regions with relatively low mean air temperatures. The incidence in cattle is a reflexion of the incidence in human beings or human excreta on cattle pastures.

A recent contribution from the Netherlands records an increase of *C. bovis* in cattle on pastures flooded by the Rhine. Water-borne sewage may aid the passage of infection from man to beast where the grazing of the latter is subjected to flooding and contamination by sewage.

The making of two or three deep transverse incisions into the muscles of the fore-arm just above the elbow would seem desirable even when no cysts are encountered in the masseter muscles or heart.

Veterinarians, who are engaged in cattle practice, can render invaluable service by explaining the position to their clients and persuading them to have their employees examined for tapeworms. These people may be prepared to submit themselves and their families for examination when they are acquainted with the horrors of harbouring several feet of tapeworm. The authorities may have faith in the popular Press but the farmer and his men are apt to ignore the many pamphlets with which they are bombarded these days. It is for the veterinarian to pass on the information and acquaint the cattle owners with the mode of spread from man to animal.

There are indications that the incidence of infection in cattle at the moment may be as high as 1 per cent.

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pass undiagnosed. It is often these other causes that are the important ones and it is they that should be receiving attention. Many astonishing claims have been made as to effects other than debility resulting from cobalt deficiency. There is no scientific foundation for these claims.

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Some Observations on the Technique of Paravertebral Anaesthesia

By

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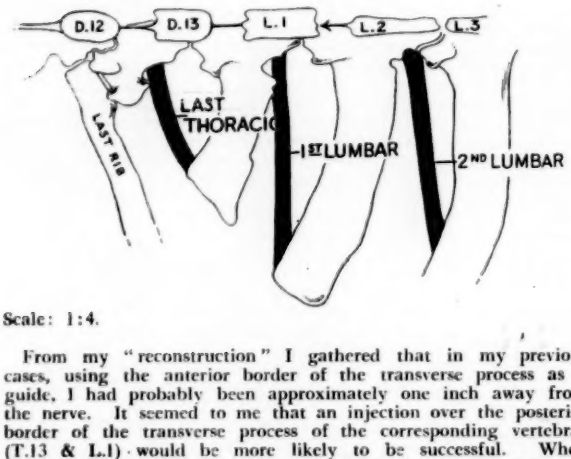
Since Farquharson (*J. Amer. vet. med. Ass.* **97**, 54-57) published his original observations on paravertebral anaesthesia as applied to the bovine, there has been little published on this subject. With reference to the location of injection sites, Wright (Veterinary Anaesthesia, 1947) quotes Farquharson as giving the head of the last rib—presumably he means the transverse process of the last thoracic vertebra, it would surely be impossible to palpate the head of the last rib—as the site for injection of the last thoracic nerve, and the level of the posterior edge of the corresponding spinous processes as sites for the lumbar nerves. He also quotes Formston as advising the use of the anterior edge of the lumbar transverse processes, as being easier to palpate in a well-developed animal. Thus, the anterior border of the first lumbar transverse process was the site for injection of the last thoracic nerve, and the injection was made anterior to and below this.

The first three cases on which I tried this technique, using Formston's siting, were complete failures as far as anaesthesia was concerned. I therefore procured a portion of knackered cow which contained the relevant structures, made a detailed dissection of the nerves, made diagrams of my dissections, and then boiled out the bones. I then reassembled the bones with wire, and placed pieces of ribbon to represent the position of the nerves. The result is seen in the accompanying diagram.

Ventral view of part of the Spinal Column of the Cow
Showing Location of the Ventral Spinal Nerves



Scale: 1:4.

From my "reconstruction" I gathered that in my previous cases, using the anterior border of the transverse process as a guide, I had probably been approximately one inch away from the nerve. It seemed to me that an injection over the posterior border of the transverse process of the corresponding vertebrae (T.13 & L.1) would be more likely to be successful. When tried in practice I found that it worked excellently. The injection is made two inches from the mid-line, and should make contact with the tranverse process near its posterior border. It is then redirected slightly backwards, narrowly to miss the bone, and about 1 cm. deeper. It is advisable to inject 10 c.c. over the nerve, and a further 10 c.c. in several places in the immediate vicinity.

E. R. Frank, in his book "Veterinary Surgery Notes," while giving Farquharson's siting for the needle, also suggests that the injection should be made posterior to the posterior edge of the transverse process. I should be grateful for the views of others who have had practical experience of this technique.

Weekly Wisdom

In order to preserve an inviolable equilibrium it is essential to accept everything.—A contributor to *The Friend* on recovering from blindness which, unexpectedly, proved temporary.

CLINICAL COMMUNICATIONS

Suspected Actinobacillosis of the Bovine Digestive Tract

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Case 1

A second calved Ayrshire cow had been giving 4 gallons of milk daily, but became gradually less willing to eat dry food and concentrates, and over a fortnight her milk yield fell to 1 gallon. On examination at this stage, the animal exhibited a normal temperature, pulse rate was 48 per minute, and rumination was normal. She grazed normally. A sample of milk was examined for acetone and proved negative. Clotted and unclotted blood samples were examined by a bio-chemist for abnormalities but none was found. Various treatments for digestive disturbance were given during the next fortnight, but no improvement in appetite resulted. Meanwhile the milk yield fell to a few pounds, and milking was discontinued. The pulse rate fell to 40 per minute. The animal became somewhat constipated, despite the fact that her diet was entirely restricted to grass, and no improvement resulted from bi-daily doses of mag. sulph., 4 oz., with ½ lb. of molasses, over a period of five days. A urine sample was examined during this period and proved negative for albumen, bile salts and pigment. Twenty-eight days after the onset of symptoms and 14 days after the commencement of treatment, there was grave loss of condition and bilateral enlargement of the prescapular and precrural glands. Blood smears were sent to a pathological laboratory, but the findings were of no assistance in diagnosing the condition.

At this time it was decided to try the effect of 2 oz. of sodium iodide intravenously. This was a purely empirical treatment. Two days later the cow developed pronounced catarrhal symptoms, including a slight cloudy nasal discharge, noisy breathing, and a temperature of 103°. These symptoms, attributable to iodism, subsided in 24 hours, and from this point appetite commenced to improve. Hay was eaten freely, but not concentrates. A fortnight later 1½ oz. of sodium iodide were injected intravenously. The cow was now eating everything with avidity, and her milk yield had risen to 1½ gallons daily. After a further fortnight, another intravenous injection of 1½ oz. of sodium iodide was given. The cow's condition was now greatly improved and recovery appeared to be complete. The pulse rate was now 70 per minute. Two months later the animal was in excellent health, though still rather thin.

Case 2

A third calved Shorthorn cow giving 5½ gallons, lost her appetite, eating practically nothing. A week later, the writer was called in. There was no fall in milk yield at this stage, though appetite had disappeared completely. The animal's temperature and pulse were normal, as also were rumen movements. A sample of blood was taken and sent to a bio-chemist for examination. The only abnormality found was low blood phosphorus. Calcium, 2 oz., and 8 oz. of glucose were injected intravenously, and stomachics prescribed.

Five days later there was no improvement and milk yield had fallen to 4½ gallons. The cow's temperature was now 104° and a course of sulphanilamide was prescribed. After three days the temperature was normal, but still she ate nothing, and milk yield had fallen to 3 gallons daily; 2 oz. of sodium iodide were now injected intravenously. There were signs of revival of appetite 48 hours later, and return to normal was rapid, accompanied by a steady rise in milk yield. A further injection of sodium iodide was given after an interval of ten days. The appetite was now normal and the milk yield had risen to 4 gallons. Three weeks later the milk yield had returned to 5½ gallons daily.

Observations

These are presumed to be cases of actinobacillosis of some part of the alimentary tract. The reticulum is the organ that usually is involved. At *post-mortem* examination the writer has seen a portion of reticulum many times the normal thickness and found to be affected with this type of infection. It would seem probable

that such a condition would interfere with normal movements of the stomach. In the two cases described the movements were, however, quite normal. Possibly some other portion of the alimentary tract might have been involved. The writer failed to observe, in either cow, any symptoms that could be regarded as diagnostic. Points of interest in Case 1 were the persistently slow pulse and the failure of response of the bowels to laxative treatments. Case 2 was treated much earlier, but seemed to respond clearly to sodium iodide. It might, of course, be argued that some other condition might respond to this line of treatment, but one knows of no other. These cases are described in the hope that someone with a more extensive experience of the condition will contribute some observations, particularly with reference to diagnosis.

Summary

Two cases are described, showing response to intravenous sodium iodide therapy. Actinobacillosis of some portion of the alimentary tract was suspected.

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" Blue Nose " Disease in the Horse *

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York

While not very well acquainted with this disease I believe that two cases have been seen which to all intents and purposes agree with the description of the disease as recorded by Kerr, McGirr & Lamont. Both cases were similar and the following description is typical.

A two-year-old grey Shire gelding was found by the farmer in a distressed and excited condition while at grass, for he was inclined to push forward against obstructions and went through a hedge before falling over a fence. He was haltered with difficulty, the owner being bitten in the process, and brought up to the stable. When seen a short time later excitement was still intense and the interior of the stable was badly damaged; the horse pressed its head for a period into the wall and then walked round. The temperature and pulse were taken with difficulty and were found to be 102° F. and 60 per minute. The horse was unwilling or unable to stand still for more than a moment and the eyes and the legs were bruised with the self-inflicted injuries. When a drink was offered the animal put its nose right into the water and then grabbed the bucket rim with its teeth; in fact he showed a strong tendency to bite anything put near his face. Hypophysin, 5 c.c., was given and another visit paid two hours later. By this time the horse was still walking round the box and biting, but oedema of the nostrils was becoming evident. " Blue nose " disease was then considered and 5 c.c. of adrenaline administered.

The excitement abated that night and next morning the horse was extremely depressed, looking very dejected and refusing to move. Oedema of the nostrils was now even more evident and the limbs were swollen, but whether or not from injury was uncertain. The animal being a grey horse, no blue discoloration of the skin was noticed. Two visits were paid this second day and 3 c.c. of adrenaline were given on each occasion. Depression was still pronounced but the animal was still standing. On the third day there was a little improvement and some food was taken. The horse cocked his ears at unusual noises and moved about, but was evidently very stiff. The temperature and pulse were now normal. Adrenaline, 5 c.c., were given and repeated each of the next two days. Improvement continued and he was turned out a little each day. However, on the sixth day of illness the horse was worse. There was no excitement but the depression had returned and oedema of the muzzle was present although the legs were practically normal. Adrenaline again was given in a 5 c.c. dose. Six hours later there was an improvement and the adrenaline injection was repeated. The next day some degree of recovery was apparent and this was maintained, so that after a month from the beginning of symptoms the horse was practically normal. The serious stage of the disease lasted 15 days and it is a matter of conjecture if this would have been shortened by giving adrenaline earlier and in larger doses. That the disease was actually " blue nose " as seen by the authors mentioned was confirmed by the opinion of five separate veterinary surgeons who saw the case.

* Contribution to " Clinical Discussion," meeting of the Yorkshire Division, N.V.M.A., at Leeds, October 29th, 1948.

The aetiology of the condition is obscure and Kerr, McGirr & Lamont suggest the possibilities of anaphylaxis photosensitisation from plant sources in the pasture. This latter theory is supported by the limitation of the blue discoloration to the unpigmented points of the skin. Our cases certainly appeared during sunny weather but with a grey horse no blue areas were seen. These authors suggest that recovery was not likely when symptoms of mania were evident, but this horse had made a complete recovery. After the development of oedema of the legs sloughing had been reported. It was doubtful here whether the leg oedema was not entirely due to the injuries received during the violent stage.

Reference.—Kerr, W. R., McGirr, J. L. & Lamont, H. G. (1946.) *Vet. Rec.* **58.** 28.

Discussion

Mr. Rae, Boroughbridge, said he had had two cases which he believed to have been " blue nose " disease. One had lived, the other showed violent excitement in the first stages and had completely wrecked a tin shed in a field. Adrenaline was left for the farmer to give—1 c.c. every 20 minutes during the first 48 hours—and by this time recovery was commencing. Three days later there was a relapse which did not respond to adrenaline and the horse died. *Post-mortem* examination revealed a fractured skull and it was presumed this had arisen from the injury in the early maniacal stage and that subsequent meningitis was responsible for the relapse.

Mr. Sutherland pointed out that Dr. Gordon had instanced similar cases arising during grass disease experimental work where Welchii Type D serum may have sensitised the animals to plants present in the pasture.

Mr. J. Marshall, Dewsbury, asked if magnesium sulphate could not have been used as a sedative, but it was pointed out that the excitement was so intense that an intravenous injection was dangerous.

Mr. W. R. McKinna queried whether lead poisoning had been considered and he was assured that the possibility had been eliminated.

ABSTRACTS

[A Technique for the Isolation of Newcastle Disease Virus using Streptomycin as a Bacterial Inhibitor. Thompson, C. H., & Osteen, O. L. (1948.) *Amer. J. vet. Res.* **9.** 303.]

The procedure described brings the technique of Newcastle disease virus isolation to a point as practicable as the growth of bacteria on artificial media. Suitably modified, it is probably adaptable to the isolation of other viruses *in vivo*.

The lungs, brain, liver and spleen are collected at *post-mortem* examination and are frozen and stored in a CO_2 ice cabinet. They are then triturated in sterile broth and centrifuged; penicillin is added in the proportion of 25 mg. per c.c. tissue extract, and they are allowed to stand for 30 minutes.

0·3 c.c. is inoculated into the allantois of 12-day-old embryos. Amniotic and allantoic fluids are harvested from embryos that die, cultured for sterility, and passaged again through eggs. By this method the virus is recovered free from contamination, and the negative result so frequently obtained following removal of contamination by filtration is avoided. Embryo M.L.D.s of 10^{-7} 10^{-8} were obtained with 49 strains of virus obtained from 258 tissue specimens, and with the same procedure three isolations of virus were made from 85 yolk specimens, gathered during a naturally occurring outbreak in a laying flock.

J. G. C.

* * * * *

[Preliminary Report on the Propagation of Avian Pneumoencephalitis Virus (Newcastle Disease) *In Vitro.* Bankowski, R. A., & Boynton, W. H. (1948.) *Vet. Med.* **43.** 305.]

The virus of Newcastle disease has been cultivated for ten passages in a modified medium, the prototype of which was used for the cultivation of hog cholera. This medium consists of ultra filtrates of pig and chicken sera containing livers and hearts of 10-13-day-old chick embryos. The initial inoculum consists of finely chopped livers of embryos showing subnormal vigour following inoculation 36 hours previously with a standard strain of virus.

The cultures are incubated at 37° C. for 72 hours and then allowed

to stand a further 24 hours at room temperature. The supernatant fluid is harvested and stored at 9° C.

It was found that tissue culture viruses failed to agglutinate chicken R.B.C.s after the first passage. The virulence for embryos was retained, however, and the amnio-allantoic fluids of the dead embryos agglutinated chicken R.B.C.s.

Subsequent to the third passage the cultures began to lose their virulence to chickens inoculated with doses having an embryo titre of 10^{-4} to 10^{-7}. The survivors from such experiments were refractory to a challenge dose of 200,000 chicken M.L.D.s and haemagglutination-inhibition antibodies were demonstrated in their sera.

J. G. C.

REPORT

[University of Reading. National Institute for Research in Dairying: Report for the Year ended September 30th, 1947.]

In the Feeding and Metabolism Department a number of experiments were carried out to measure the time taken for undigested food residues to pass through the ruminant. It was found, by feeding stained hay to dairy cows, that stained hay residues first appeared in the faeces after 12 to 18 hours. The concentration then rose steadily to a peak after 36 to 45 hours, followed by a steady decline sometimes continued for ten days. The addition of mangolds to the ration appeared to speed up the rate of passage of hay.

Preliminary feeding trials with calves provided information as to the proportions of the various ingredients most suitable for use in the diets of experimental calves. After the age of two days calves were given the following mixture, at the rate of 1 lb. milk per 10 lb. live weight: dried separated milk, 1 lb.; glucose, 4 oz.; emulsified margarine (vitamin-free), 2 oz.; vitamins A and D concentrate in arachis oil, 3,500 i.u. vitamin A and 700 i.u. vitamin D per calf daily; water to make up to 1 gallon. Preliminary experiments, carried out in conjunction with the Royal Veterinary College, showed that calves given colostrum during the first two days of life and subsequently fed with this "synthetic milk" would survive and thrive, whereas those which received no colostrum died. Subsequently, a carefully controlled experiment established that it was the non-fatty fraction of colostrum which is essential for survival. The vitamin A content of the pre-partum diet was shown to have a marked effect upon the vitamin A content of colostrum and also upon the foetal liver reserves of this vitamin.

The Department of Lactational Physiology continued experiments on induced mammary development and lactation in the goat. This work was carried out in collaboration with Mr. K. C. Richardson, of the Department of Anatomy, University College, London. Investigations of the degree of udder development and the functional efficiency of the experimentally developed mammary tissue in ovariectomised virgin goats treated with synthetic oestrogen (hexoestrol) in combination with adequate daily doses of the corpus luteum hormone, progesterone, indicate no superiority of the combined treatment over treatment with hexoestrol alone in relatively short-term experiments, but suggest that if the treatment period is comparable in duration with normal pregnancy in the goat, the combined treatment might be expected to induce more normal and extensive mammary development, probably leading, in consequence, to superior milk yields. In these experiments it has been possible to administer doses of progesterone comparable to the amounts believed to be produced by the corpus luteum during pregnancy, and the oestrogen/progesterone ratio has been chosen on the basis of what has been found to give optimal mammary growth in small animals.

The goat also became the experimental animal of choice for a study of the effects of adrenalectomy, and replacement therapy with various adrenal cortex hormones, on the *composition* of milk. The technique of adrenalectomy in the goat was worked out for this purpose.

An investigation was continued into the function of mammary gland arginase. This enzyme appeared to be a dissociable manganese-protein complex.

The response of the goat to mare's serum gonadotrophin was further studied. A certain number of successes were again obtained as regards out-of-season breeding experiments, though the proportion was small.

Among the work carried out by the Department on Nutrition, in addition to that on colostrum, was an investigation into the vitamin C metabolism of the pig, and also the possible causation of rickets in fattening pigs by the addition of dried yeast to the diet.

G. P. W.

IN PARLIAMENT

Agriculture (Miscellaneous Provisions) Bill

On February 9th, the House gave second reading to the Agriculture (Miscellaneous Provisions) Bill.

Mr. T. Williams, Minister of Agriculture, in moving, said that the main purpose of the Bill was to seek statutory authority for items of expenditure arising out of the measures included in the agricultural expansion programme launched in 1947 and designed to increase home output from farms by something like £100 million worth by 1952. In addition to higher prices three special forms of financial assistance were being offered for which they now wanted Parliamentary authority. These were the calf rearing subsidy, the free artificial insemination service, and a number of schemes for the conservation of grass and forage crops.

There had been a rapid expansion of the artificial breeding of cattle, and with the use of bulls of good quality it was hoped there would be a significant increase in milk yields. The number of cows inseminated in the first year was 12,600, and the estimate for the second and third years was 32,000 rising to 80,000. The free service in the case of cattle raised for beef would go on until the end of March, 1950.

All the experts thought dried grass could make an important contribution to our protein supplies. Already 19 communal drying centres had been established and the results were very promising.

New Milk Regulations

In reference to Clause 7 the Minister said: "This clause amends the Food and Drugs (Milk and Dairies) Act, 1944, which provides for the transfer from the local authorities to the Minister of Agriculture the responsibility for the enforcement on dairy farms in England and Wales of the Milk and Dairies Regulations, and also the Raw Milk (Special Designation) Regulations, which govern the conditions of the granting of licences to farmers to sell their milk either as accredited or tuberculin tested. The 1944 Act comes into operation on a date to be determined by the Minister of Health. Unfortunately, however, owing to certain technical difficulties, the operation of the Act has been delayed. The chief object of this Clause is to remove these difficulties, to enable regulations to be made, and to bring the Act into operation as early as possible.

"The new regulations propose to give the medical officer of health power to prohibit sales of milk suspected of being infected with bovine diseases, such as tuberculosis or undulant fever, in addition to the present powers to stop milk infected with notifiable diseases such as diphtheria or scarlet fever. Any single cow may be giving tuberculous milk without showing any clinical signs of the disease, and the real test is to determine which one of any herd may be the offending animal, which may take weeks to decide. The farmer may be stopped from selling his milk for weeks before the offending animal is discovered. We feel that in those circumstances the farmer is obviously entitled to compensation, but medical officers of health may hesitate to carry out their powers and duties if there is risk of letting their local authorities in for a very large bill for compensation. To meet this difficulty, the Minister of Health will be empowered to refund to local authorities up to 75 per cent. of any sums paid by way of compensation."

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Questions

Calves (Subsidy Payments)

Mr. Hurd (on February 7th) asked the Minister of Agriculture how many calves, male and female, were approved for the calf rearing subsidy in the last four months; and how many rejected by the certifying officers.

Mr. T. Williams: In the last four months subsidy payments were made in England and Wales and Northern Ireland for 245,000 heifer and 106,000 steer calves. Over 7,000 were rejected in England and Wales. No record is kept of rejects in Northern Ireland.

Colonel Gomme-Duncan (on February 8th) asked the Secretary of State for Scotland how many persons are employed in Scotland approving calves for subsidy payment; what were the costs of administration incurred in the last four months; and how many calves, male and female, have been approved for subsidy and how many rejected by the certifying officers.

Mr. Woodburn: Thirty-four certifying officers are employed on this work at present. The scheme had been in operation for five months at January 31st, 1949. Administrative expenses for the five months are estimated at £13,000, of which £10,500 was for certifying officers' salaries and travelling expenses. In round figures, the number of calves ear-marked and certified as eligible was just over 100 000, of which 23,000 are steer calves and the remainder heifers. The number of calves rejected was 4,900.

Gin Traps

Mr. G. Thomas asked the Minister of Agriculture whether he proposes to take action to make illegal the use of gin traps in rabbit burrows.

Mr. T. Williams: The gin trap is the only practicable method of destroying rabbits in certain types of burrows. The Sawyer trap is too big for use in such burrows and the use of gas would be impracticable. Wild rabbits cause enormous damage to agriculture annually and, in the interests of food production, it is essential that these pests should be destroyed by every available legal means. The Sawyer (humane) trap is not available in sufficient quantity to replace the gin trap to any appreciable extent and will not be so for some considerable time. Only one firm is producing this trap, which is still being subjected to field tests. New legislation would be necessary to make the use of gin traps illegal. In order to encourage a greater use of gas for destroying rabbits, an arrangement has been in operation for the past eight years whereby farmers are able to purchase gassing powder for destroying rabbits at one half the normal retail price.

* * * * *

Swans (Protection)

Mr. Astor (on February 7th) asked the Secretary of State for the Home Department if he is aware of the number of wild swans being killed in the British Isles for food; and if he will take the necessary measures to protect these birds.

Mr. Younger: The number of swans killed is not known. As regards measures of protection my right hon. Friend is advised that proceedings can be taken, and have been successfully taken in the past, for the killing of swans, under Section 41 of the Malicious Damage Act, 1861. In addition certain measures of protection are available under the Wild Bird Protection Acts and local orders made under them.

NOTES AND NEWS

Diary of Events

Feb. 23rd.—Annual Meeting of the South Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Feb. 23rd.—Annual Meeting of the Scottish Metropolitan Division, N.V.M.A., at the Royal (Dick) Veterinary College, Edinburgh, 2.30 p.m.

Feb. 24th.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Carlisle (Crown and Mitre Hotel), 2 p.m.

Feb. 24th.—Glasgow Veterinary College Annual Ball, at Cranston's, Royal Exchange Square, 8 p.m.

Feb. 25th.—Annual Meeting of the Royal Counties Division, N.V.M.A., at Reading (Caversham Bridge Hotel), 2.30 p.m.

Feb. 25th.—Liverpool University Veterinary Society Annual Ball.

Feb. 26th.—Meeting of the Society of Women Veterinary Surgeons at the Royal Veterinary College, N.W.1, 2 p.m.

Feb. 26th.—Scientific Meeting of the Nutrition Society (Scottish Group), in the College of Domestic Science, 1, Park Drive, Glasgow, 11 a.m.

Mar. 3rd.—Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, 6 p.m.

Mar. 4th.—Annual Meeting of the South Wales Division, N.V.M.A., at Carmarthen (Dolwar Café), 2 p.m.

Mar. 9th.—Meeting of the Southern Counties Division, N.V.M.A., at Bournemouth, 6 p.m.

Apr. 5th, 6th and 7th.—Quarterly Meetings of Council, R.C.V.S.

Apr. 20th, 21st and 22nd.—Quarterly Meetings of Committees and Council, N.V.M.A., in London (Meeting of Council, April 22nd).

June 1st (Wednesday).—Annual General Meeting of the Royal College of Veterinary Surgeons.

June 1st, 2nd and 3rd.—Quarterly Meetings of Council, R.C.V.S.

Aug. 8th to 13th.—Fourteenth International Veterinary Congress, Central Hall, Westminster, and Church House, Westminster, London, S.W.1.

Aug. 12th to 15th.—Sixty-seventh Annual General Meeting and Congress, N.V.M.A., in London.

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Quarterly Meetings of Council and Committees, N.V.M.A.

As indicated above, Council, N.V.M.A. will meet in London on Friday, April 22nd, with committees on the two days immediately preceding. Early intimation is given, in order that members concerned may make accommodation arrangements in good time, as the position remains difficult.

Applications for Additional Supplies of Petrol

Mr. John Holroyd, Liaison Officer for the North Western Region, writes to point out that he has recently received complaints from the Regional Petroleum Officer concerning the large number of veterinary surgeons who apply for additional supplies of petrol during the last two or three weeks of a rationing period, such late applications affording him insufficient time to consider them and despatch coupons in time for use before the end of the period, after which, any coupons issued are invalid.

We believe this complaint to be applicable to other areas also and therefore would urge all members to ensure that their applications for additional supplies reach the Regional Petroleum Officer or the Liaison Officer, as the case may be, not later than the first day of the last month in any rationing period.

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N.V.M.A. Membership Subscription

The attention of members is drawn to the following Article of Association of the N.V.M.A.:—

> 35. During the first week of March in each year, notice shall be sent to all members whose subscriptions shall be unpaid. Should the subscription of any member remain unpaid by the 30th day of June, he shall cease to be entitled to receive the publications of the Association or to attend or vote at any General Meeting but shall remain legally liable for his subscription. If the subscription of a member shall be in arrear for one year he shall cease to be a member of the Association.

In the past, through failure to pay their subscriptions when due, the Association has been in the unfortunate position of having to remove the names of a number of members when it had been only a matter of inadvertence that the subscription had not been paid. The Officers of the Association will be pleased if this position can be avoided in future by members recognising the need to have their subscriptions paid in good time.

The majority of members find a banker's order the most convenient method of payment, and the General Secretary will be glad to send one of these forms to any member desirous of adopting this system.

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PERSONAL

Births.—Barnard.—On February 9th, 1949, at 5, Estcourt Street, Devizes, to Barbara, wife of Geoffrey M. Barnard, M.R.C.V.S.,—a third daughter, Judith.

Lewis.—On February 9th, 1949, at Craigard Maternity Hospital, to Violet, wife of G. B. Lewis, M.R.C.V.S., Dell Road, Campbeltown, Argyll—a daughter.

Scott.—On January 15th, 1949, to Shirley, wife of H. Maxwell Scott, of Maddle, Upper Lambourn, Berks.—a daughter, Diana Jean.

Taylor.—On February 9th, 1949, at Homeland Nursing Home, Great Western Road, Glasgow, to Jean (*née* Wilson), wife of Philip E. Taylor, M.R.C.V.S.—a daughter, Gail Marie.

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R.C.V.S. OBITUARY

Perry, John Lord, "St. Pierre," 58, Newport Road, Cardiff. Graduated London, December 21st, 1887. Died February 8th, 1949; aged 82 years.

Wardrop, Ernest, Ramsey House, Outwell, Wisbech, Cambs. Graduated Edinburgh, May 21st, 1902. Died February 12th, 1949; aged 72 years.

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PURCHASE TAX EXEMPTIONS

Drugs for Dispensing Only

Under Sections 21 and 22 of the Finance Act, 1948, the Treasury has made an Order, entitled The Purchase Tax (No. 1) Order, 1949, exempting from tax certain drugs and medicines which the Commissioners of Customs and Excise are satisfied are put up for dispensing and will be used only for that purpose. Under the Order, which comes into operation on May 2nd, almost the only medicines which will remain liable to tax will be those sold directly to the public under proprietary designations.

The exemption applies to drugs and medicines which comply, *inter alia*, with the following conditions:

They must be substances described in the named official monographs and formularies of the Ministry of Health Drug Tariffs, or mixtures of such substances, and must be in a container on which is conspicuously written the official name, etc., of the substance or substances.

It must be shown to the satisfaction of the Commissioners of Customs and Excise by the nature of the goods or their get-up, that the goods will only be supplied to a duly qualified medical practitioner, a registered dental practitioner registered in the dentists' register under the Dentists Acts, 1878 to 1923, or a registered veterinary surgeon or practitioner registered in the Register of Veterinary surgeons or the Supplementary Veterinary Register under the Veterinary Surgeons Acts, 1881 to 1948.

It must be further shown to the satisfaction of the Commissioners that the goods will be used only for the purpose of dispensing prescriptions of a duly qualified medical practitioner, registered dental practitioner or registered veterinary surgeon or practitioner.

The goods or the get-up of the goods or both must be clearly marked with such writing or in such other special manner as the Commissioners may require for the purpose of the Order.

Provided the above conditions are satisfied, provisions III, IV and V of Notice No. 78 M will not apply and the goods may be put up under a brand name or trade mark without invalidating the title to exemption from tax, and the goods themselves may be trade marked. Exemption from tax is conditional on the Commissioners being satisfied either that the substance itself is of a kind supplied to the public only on the prescription of a doctor, etc., or that the substance will not be sold across the counter to the public in the get-up in which it is supplied to the pharmacist, etc.

Details of approved types of pack, the marking of containers, etc., will be found in the Order (S.I. 1949, No. 46) copies of which may be purchased from the Stationery Office, price 1d.

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TO BECOME A BARRISTER

As several members of the profession have acquired the qualification of Barrister-at-Law, and others doubtless have a similar ambition, the following note may be of interest to our readers:—

In order to become a Barrister-at-Law it is necessary first to become a member of one of the four Inns of Court and thereafter to pass the necessary examinations. Before any person can be admitted as a member of one of the Inns certain educational qualifications are required, which in general amount to matriculation and include the subject of Latin.

However, where an applicant has not obtained certificates of education which comply fully with the regulations of each of the Inns of Court, exceptions are sometimes made where the applicant is of standing and has some educational qualifications which fall a little short of the required standard.

It will be of interest to veterinary surgeons to know that a holder of the M.R.C.V.S. Diploma has been accepted as a member of one of the Inns of Court on condition that he passes the Council of Legal Education's examination in Latin. The applicant did not have Matriculation and admission to membership was granted on the limited education certificate which he had, together with his Diploma of Membership of the Royal College of Veterinary Surgeons, after the Registrar of the Royal College had supported his application.

Should any member of the profession contemplate being called to the Bar the Registrar of the Royal College of Veterinary Surgeons will be pleased to assist any such application where the member's certificate of preliminary education falls short of the requirments of the Inn of Court concerned.

There are four Inns of Court, namely, the Inner Temple, the Middle Temple, Lincoln's Inn and Gray's Inn. Besides passing the necessary legal examinations it is necessary to eat a certain number of dinners in the Hall of the Inn in each term, but this requirement easily can be managed by anyone who is within easy reach of London or by anybody who is prepared to spend two or three weeks in each year in London.

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PROTECTION OF WILD LIFE

Nature Conservancy for Great Britain

In a written answer to a question by Dr. Somerville Hastings Mr. Herbert Morrison, on Friday of last week, announced the composition of a Nature Conservancy for Great Britain, an important step forward in carrying out the recommendations of the Report on the Conservation of Nature published in July, 1947. That report recommended not only the setting aside of 73 areas of special scientific interest as national nature reserves, but also the establishment of a biological service to manage them and to perform certain other functions on behalf of the State. Last November, Captain Cyril Diver was appointed Director-General of the new service, with his office at Thorney House, Smith Square, S.W.1. A separate committee will supervise activities in Scotland, and Dr. John Berry, F.R.S.E., biologist to the North of Scotland Hydro-Electric Board, has been released to serve as Director for Scotland.

The Conservancy is seeking a charter on similar lines to that of the Agricultural Research Council, with which it will co-operate. The Committee of the Privy Council for Agricultural Research will be reconstituted as the Committee of the Privy Council for Agricultural Research and Nature Conservation, and the Minister of Town and Country Planning will join it in view of its extended responsibilities. The Conservancy will start work at once, its first task being to survey and prepare action.

Membership of the Conservancy will be as follows:—

Professor A. G. Tansley, F.R.S., chairman; Mr. A. Anderson, M.P.; Mr. C. Elton; Mr. E. B. Ford, D.SC., F.R.S.,; Mr. H. Godwin, D.SC., F.R.S.; Mr. E. H. Keeling, M.P.; Mr. N. B. Kinnear; Professor R. C. McLean, D.SC.; Professor J. R. Matthews, F.R.S.E.; Mr. E. M. Nicholson; Professor W. H. Pearsall, D.SC., F.R.S.; Mr. M. Phillips Price, M.P.; Mr. J. A. Steers; Mr. W. L. Taylor; and Mr. A. E. Trueman, D.SC., F.R.S.E., F.R.S.

The Scottish Committee will have the following composition:

Professor J. R. Matthews, F.R.S.E., F.L.S., chairman; Mr. A. Anderson, M.P.; Mr. H. C. Beresford-Peirse; Dr. F. Fraser Darling, D.SC., PH.D., F.R.S.E.; Mr. A. B. Duncan; Dr. D. N. McArthur, D.SC., PH.D., F.R.S.E.; Major Sir Basil H. H. Neven-Spence, M.P.; Professor A. D. Peacock, D.SC., F.R.S.E.; Professor J. Ritchie, D.SC.; Professor J. Walton, D.SC., F.R.S.E.; Lord Wemyss and March; and Professor C. M. Yonge, D.SC., F.R.S., F.R.S.E.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Foot-and-Mouth Disease:

Devon.—Matford Home Farm, Alphington, Exeter, Devon (Feb. 11th).

Swine Fever:

Warwick.—69, Walkers Heath Road, Kings Norton, Birmingham. (*Carcase at* Ministry of Food Abattoir, Birmingham) (Feb. 12th).

Sheep Scab:

Yorks. W.R.—Overhouse Farm, Cowling, Keighley (Feb. 9th); Mire Close Farm, Cowling, Keighley (Feb. 11th).

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HORSE MEAT FOR HUMAN CONSUMPTION

The Parliamentary Correspondent of *The Times* reports that on February 10th a deputation of M.P.s saw Mr. Strachey, Minister of Food, to urge that all slaughterhouses dealing with horses for human consumption should be compulsorily licensed by the Ministry of Food. The deputation, which was led by Mr. Sutcliffe, Conservative member for Royton, consisted of Mr. Royle, Labour member for Salford West, Major J. Morrison, Conservative member for Salisbury, and Mr. Anthony Greenwood, Labour member for Heywood and Radcliffe. The Minister of Food gave an undertaking that he would discuss the matter with the Minister of Agriculture.

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MORBIDITY AND MORTALITY STATISTICS OF DOMESTIC ANIMALS

The collection of accurate data on the incidence of disease in animals is currently a major concern of the Association. That the difficulties attendant upon the associated problem of collecting vital statistics of domestic animals are world wide is well illustrated by the following note, reproduced from *The Journal of the American Medical Association* (Vol. 138, No. 13, November 27th, 1948, p. 973).

Reliable morbidity and mortality statistics of domestic animals are unavailable. The veterinarian is required to report certain communicable diseases, but reporting is uncertain and enforcement difficult. The incidence of numerous other diseases is entirely unknown—diseases of great economic importance as well as diseases which may be transmitted to man. The United States Livestock Sanitary Association, the American Veterinary Medical Association, and the Division of Biology and Agriculture of the National Research Council have interested themselves in the problem, with the hope that proper legislation may be enacted to correct the situation. The United States Bureau of Animal Industry is cognisant of the need but has neither the funds nor the personnel to initiate the programme. The consensus seems to favour compulsory

reporting to the office of the state livestock disease control official and thence to the United States Bureau of Animal Industry, with possibly the establishment of a new division of vital statistics. Numerous problems must be solved before the project can be functionally effective. Manuals on nomenclature and on standard methods of diagnosis are in process of preparation but are not yet available. Experiments in the collection of morbidity and mortality data of farm animals have been made in a small way, and should be continued. The shortage of veterinary pathologists will require some years to remedy. The seriousness of the problem, however, from both the economic and the public health point of view, as well as the possible role that infectious diseases of animals might play in biological warfare, calls for serious attention.

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Sir Frederick Ogilvie, Principal of Jesus College, Oxford, and a former Vice-Chancellor of Queen's University, Belfast, is Chairman of a Committee set up by the Ulster Prime Minister "to consider the possible development of Magee University College, Londonderry, in relation to the provision of University education in Northern Ireland."

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Tuberculosis (Attested Herds) Scheme

STATEMENT SHOWING POSITION OF "ATTESTED HERDS" IN EACH COUNTY AS AT DECEMBER 31ST, 1948

County	Total Cattle as at 4.6.48	Number of Attested Herds as at 31.12.48	Number of Cattle in Attested Herds as at 31.12.48	Percentage of Attested Cattle to Total Cattle
Bedford	44,808	73	4,470	10·0
Berks	81,151	392	21,750	26·8
Buckingham	107,354	209	12,020	11·2
Cambridge	29,655	75	4,310	14·5
Isle of Ely	19,638	22	950	4·8
Chester	238,541	386	20,310	8·5
Cornwall	259,545	317	11,880	4·6
Cumberland	217,354	11,08	52,280	24·1
Derby	179,730	179	9,670	5·4
Devon	396,478	529	22,230	5·6
Dorset	144,236	522	28,930	20·0
Durham	112,318	316	13,150	11·7
Essex	121,985	444	22,620	18·5
Gloucester	182,900	369	20,410	11·2
Hampshire	139,813	573	28,210	20·2
Isle of Wight	20,103	56	2,430	12·1
Hereford	131,445	232	12,570	9·6
Hertford	57,650	204	13,240	23·0
Huntingdon	27,586	24	1,910	6·9
Kent	117,868	335	16,310	13·8
Lancaster	271,835	459	19,940	7·3
Leicester	154,562	146	8,090	5·2
Lincoln (Holland)	24,931	1	10	—
Lincoln (Kesteven)	65,025	21	920	1·4
Lincoln (Lindsey)	150,565	45	2,240	1·5
London	84	—	—	—
Middlesex	7,534	22	1,270	16·9
Norfolk	164,648	301	21,090	12·8
Northampton	143,457	90	5,530	3·9
Soke of Peterborough	7,117	—	—	—
Northumberland	199,041	252	13,830	6·9
Nottingham	104,787	96	4,430	4·2
Oxford	99,661	422	22,560	22·6
Rutland	19,280	11	630	3·3
Salop	269,339	391	23,950	8·9
Somerset	309,568	698	36,610	11·8
Stafford	229,962	164	8,070	3·5
Suffolk, East	72,704	147	7,830	10·8
Suffolk, West	35,207	115	7,350	20·9
Surrey	50,092	288	13,800	27·5
Sussex, East	105,381	300	12,820	12·2
Sussex, West	70,440	249	12,030	17·1
Warwick	142,926	188	10,550	7·4
Westmorland	93,596	857	36,510	39·0
Wilts	186,714	354	24,400	13·1
Worcester	96,477	136	7,050	7·3
Yorks, East Riding	123,914	47	1,620	1·3
Yorks, North Riding	236,791	527	19,200	8·1
Yorks, West Riding	333,552	666	25,710	7·7
ENGLAND	6,899,848	13,358	667,690	10·4
Anglesey	56,187	61	2,150	3·8
Brecon	46,035	158	5,640	12·3
Caernarvon	61,143	162	5,370	8·8
Cardigan	73,431	3,595	55,000	74·9
Carmarthen	130,013	4,523	88,010	67·7
Denbigh	100,807	465	12,440	12·3
Flint	60,297	82	3,640	6·0
Glamorgan	72,992	179	5,130	7·0
Merioneth	41,655	906	17,420	41·8
Monmouth	67,285	146	6,230	9·3
Montgomery	94,918	354	13,100	13·8
Pembroke	98,411	1,715	37,310	37·9
Radnor	37,434	49	1,340	3·6
WALES	940,608	12,395	252,780	26·9
ENGLAND & WALES	7,340,456	25,753	920,470	12·5
SCOTLAND	1,499,243	11,143	524,324	35·0
GREAT BRITAIN	8,839,699	36,896	1,444,794	16·3

• All cattle herds in Zetland are attested. This figure represents the number of animals in the last test of the herds.

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"ARE FEMALES BORN CO-TWIN WITH MALES STERILE?"

In the *British Medical Journal* feature "Nova et Vetera" (issue January 8th), and under the above sub-heading, J. CHASSAR MOIR refers to the researches of Sir James Young Simpson* (1871): they provide interesting reading. Starting with the knowledge that in the bovine, the female of such a birth was almost though not always sterile, Sir James set himself the task of proving or disposing of the prevalent view that the situation held good amongst humans. He found no evidence of the occurrence in sheep nor in the twin mare or she-ass. "The mare indeed appears only in extremely rare cases to produce twins . . . and these seldom survive for any length of time after birth."

Of 123 human females born co-twin with males, he discovered that no fewer than 112 had families, and that only 11 were without issue, although married for several years. He concludes that, "females born under the circumstances we are considering, were *unproductive in the proportion of 1 in 10*. The fruitfulness of these women was, moreover, not impaired. The average number of children born to each mother was 4·6, as compared with 4·3 born to a group of women not themselves twins.

As the author in the *Journal* says, "Can we wonder at Simpson's amazement . . . knowledge of 'chemical messengers' in the blood-stream was more than a half century ahead"—and a comparative study of the placental blood circulations likewise had not been made.

* *Selected Obstetrical and Gynaecological Works of Sir J. Y. Simpson*, ed. by J. Watt Black, p. 822. Edinburgh, 1871.

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THE INSTITUTE OF MEAT

To meet the needs of those desiring greater scientific knowledge of their craft, the Council of The Institute has approved the introduction of a Higher Certificate examination. "Some criticism has been directed against the syllabuses of the Ordinary Certificate examination, particularly in connection with the science section," states *The Meat Trades Journal*, "though at the same time, many centres have expressed their approval of the scheme. It is felt that in some cases the criticism may possibly be due to the fact that the critics are not in possession of all the facts. The Association of Principals of Technical Institutions, and the Association of Technical Institutions, agree that it is desirable to cover the subjects as set out in the Regulations, but suggest that the period of the course might be extended so as to cover the work more adequately. The present weakness will gradually be remedied by the work in the secondary modern schools, and it may be anticipated that in the not too distant future candidates, when leaving school,

will be conversant with the major part of the work covered by the science syllabus. The need for an extension of time will then disappear. In all events, the Council are determined to maintain the high standard that has been introduced into the examination."

The *Journal* intimates that the annual general meeting of The Institute will be held in London on April 11th; also that the Council approved the appointment of Mr. A. V. Pettit as full-time Secretary of The Institute.

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GOVERNMENT EXPENDITURE ON UNIVERSITIES IN ENGLAND

In a written recent Parliamentary reply to Mr. Kenneth Lindsay, Sir Stafford Cripps, the Chancellor of the Exchequer, said that the non-recurrent payments to the Universities in England during the years 1945-49 were as follows: 1945-46, £620,895; 1946-47, £566,996; 1947-48, £1,920,508; 1948-49 (to January 14th, 1949), £1,980,686. The principal projects covered by these grants are the purchase of sites and buildings, the erection of new buildings (including new teaching blocks for science and technology and halls of residence) and the provision of new equipment. The amounts paid to individual institutions have varied according to the opportunities for building and the degree of expansion of numbers in an individual centre. Sums in excess of £200,000 are listed as follows: University of London, £1,283,348; University of Durham, £504,011; University of Nottingham, £319,083; University of Birmingham, £292,485; University of Leeds, £270,418; University College of Hull, £240,813; University of Bristol, £230,521; University of Oxford, £217,507; University of Reading, £215,645; University College, Leicester, £213,902.

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Mr. Walter Hutchinson's "National Gallery of British Sports and Pastimes" has been opened in the building formerly known as Derby House, Stratford Place, W.1. The hours of opening are 10 to 6 on weekdays and 2 to 6 on Sundays.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents are requested to write as briefly as possible.

INTRAVENOUS CHLORAL FOR ACUTE GRASS OR LACTATION TETANY

Sir,—The following may be of interest to those practitioners who have to deal regularly with cases of acute grass or lactation tetany in dairy cows. In such cases the injection of calcium borogluconate intravenously is not without risk no matter how carefully or slowly it is given. I have recently treated a few cases of the acute variety with chloral hydrate given intravenously, the calcium and magnesium solutions being given subcutaneously. I feel that by so doing I have possibly saved animals I might have lost with routine treatment. Sufficient chloral solution was given to produce a moderate degree of anaesthesia. In each case when the animal regained its feet it has been free of "staggers" symptoms. I have not, however, treated sufficient cases with this method to give it whole-hearted recommendation. Although lucky so far, I am of the opinion that the margin between success and failure is very small in respect of the amount of chloral injected. I think, however, the risk is warranted in those cases where one feels that there is a good chance of there being a dead cow and an irate owner with the first pump of the calcium injector. The chloral solution is of the same strength as recommended by Professor J. G. Wright for intravenous anaesthesia in the bovine.

Yours faithfully,

Blackburn, Lancs. ALEXANDER H. HOGG.

February 4th, 1949.

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SO-CALLED "HARD PAD DISEASE"

Sir,—Whilst we await the further reports from Messrs. MacIntyre, Trevan and Montgomerie on the above condition, might I offer a gleam of hope to all those who are worried?

It is this. In my hands, during the last three months, 13 greyhound puppies whelped, reared and vaccinated under my personal supervision and all with disease-free histories, have been exposed to natural infection by so-called "hard pad disease" and none has contracted it. All 13 reacted to virus injection (four to six days) when vaccinated as youngsters by L.D. Method I (B.W. & Co.). They are now adult and some are racing in London as recognisable, named, subjects.

In the course of the next month or two I hope to publish temperature charts and other details of my recent experiences. Meantime I emphasise that the incidence of the disease here was confirmed by Mr. MacIntyre who very kindly accepted three blood samples for ferret inoculation.

Yours faithfully,

The Hook Kennels, Northaw, Potters Bar, Middlesex. JAS. K. BATEMAN.

February 12th, 1949.

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THE INCIDENCE OF TUBERCULOSIS IN THE HORSE

Sir,—With reference to the above subject, correspondence on which has been appearing in recent issues of *The Veterinary Record*, I should like to add my experience. During the months November and December, 1948, at a licensed horse abattoir here, it was my duty to examine both *ante-mortem* and *post-mortem* 980 horses. The animals were drafted from different parts of the country and were representative of all ages.

Of this number four were found to be suffering from tuberculosis. In two cases with a history of diarrhoea prior to slaughter, lesions were seen in the mesenteric glands and spleen with numerous ulcers in the intestinal wall. A third case showed, in addition to infection in the mesenteric glands, widespread small grape-like lesions on the peritoneum. The fourth case had a chronic cervical ostitis apparent on *ante-mortem* examination, with lesions also in the spleen and mesentery.

Yours faithfully,

Clonmel, Co. Tipperary, Ireland. LIAM DROMEY.

February 8th, 1949

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"THE OPEN COLUMN"

Sir,—It is, I regret, a fact that correspondence appearing in the *Record* receives more observation than anything of a similar nature in the Supplement. The latter is often cast aside—unopened.

Thus the decision of the Editorial Committee to confine to the Supplement letters on a subject—distasteful to many employers yet of vital importance to all employees—will prevent any tendency to weekly efforts on the subject in the *Record*. Perhaps the Committee feel prevention is better than cure!

In fairness to all sides may I suggest that further thought be given to this decision, with a view to making full use of the "Open Column."

Yours faithfully,

Fieldhead, Whickham, Newcastle-on-Tyne. J. E. JOHNSON.

February 5th, 1949.

. . . . .

[The decision to which our correspondent takes exception was arrived at, as previously intimated, because of a tendency on the part of the writers of letters on the subject of conditions of employment of young graduates, to quote from a document which had not appeared in our "open" columns. It was not an Editorial Committee decision, but an instruction received from the Offices of the Association on a matter of external policy.—*Editor*].

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CINEMA CONTACT FACILITY

Sir,—In further reference to the subject of Mr. Sidney Nye's letter, my first experience of cinema contact was while I was a student seeing country practice in 1937. In those days, all the Odeon Cinemas provided at the box office a printed slip for doctors and veterinary surgeons to fill in. Other cinemas all provided facilities.

Since being in practice in London, I have invariably left my seat number and name at the box office of any theatre and my name at the box office of any cinema. On every occasion I have been treated with courtesy and helpfulness.

Yours faithfully,

8, Abingdon Villas, Kensington, W.8. LEONARD R. GEFFEN.

February 14th, 1949.